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09/892,027	06/25/2001	Mark R. Parker	D/A1248	1841

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EXAMINER

HUNTSINGER, PETER K

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/892,027		PARKER ET AL.	
	Examiner		Art Unit	
	Peter K. Huntsinger		2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on 14 July 2005 has been entered in full.

Response to Arguments

2. Applicant's arguments filed 14 July 2005 have been fully considered but they are not persuasive.

Applicant argues, on pages 5 and 6 of the remarks, that:

Terasawa increases black ink density by either black dots with a larger volume or by printing two black dots superposed on one another. Applicants' method increases black ink density by printing a black dot on top of a color dot.

- a. Terasawa discloses printing two droplets of blacks to every color droplet. This would meet the limitation of the claim as a single droplet of black ink is printed before another single droplet of black ink is printed. Therefore, a single droplet of color ink is printed and a single droplet of black ink is printed, regardless of whether another droplet of black ink is printed at that location.

Terasawa teaches printing a color dot between adjacent black dots.
Applicants' method prints a black dot on top of a color dot.

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- b. Terasawa discloses that the color and black dots are superposedly shot (col. 7, lines 9-13). Printing the second shot with a deviation from the first is merely a possible alternative.

Nothing in Moriyama overcomes the lack of teaching of Terasawa.

Moriyama teaches forming black either by printing with black ink or forming black by printing a combination of C, M, and Y.

- c. Argument is moot. See the above response.

Nothing in Fukasawa overcomes the lack of teaching in Terasawa.

- d. Argument is moot. See the above response.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Terasawa U. S. Patent 6,102,520.

Referring to claim 1, Terasawa discloses a method for improving black print quality in a color printer having at least one color ink and black ink, comprising: determining a location on a substrate where a black pixel is to be printed (col. 6, lines 46-51), printing a droplet of color ink at the location, and printing a droplet of black ink on top of the color droplet (col. 6, lines 52-63) at the same location (col. 7, lines 9-13), wherein the droplet of color ink and the droplet of black ink are of substantially the same size (col. 12, lines 5-8).

Referring to claim 2, Terasawa discloses the method of claim 1, wherein the color printer includes cyan, magenta and yellow and wherein the step of printing a droplet of color ink comprises printing a droplet of one of cyan ink, magenta ink and yellow ink (col. 14, lines 6-15).

Referring to claim 4, Terasawa discloses a method for improving black print quality in a color printer having at least one color ink and black ink, comprising: selecting a fast print mode (Black Mix Print Mode, col. 11, lines 49-52); providing an image to be printed on a substrate (col. 2, lines 26-29); determining locations within the image where black pixels are to be printed (col. 6, lines 46-51); printing a droplet of color ink at least one of the black locations; and printing a droplet of black ink at each of the black locations (col. 6, lines 52-63), wherein for each droplet of color ink printed at one of the black locations (col. 7, lines 9-13), the droplet of black is printed on top of the color droplet and the droplet of color ink and the droplet of black ink are of substantially the same size (col. 12, lines 5-8).

Referring to claim 5, Terasawa discloses the method of claim 4, wherein the color printer includes cyan, magenta and yellow and wherein the step of printing a droplet of color ink comprises printing a droplet of one of cyan ink, magenta ink and yellow ink at each of the black locations (col. 14, lines 6-15).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa U. S. Patent 6,102,520 as applied to claims 2 and 5 above, and further in view of Moriyama et al. U. S. Patent 6,312,102.

Referring to claim 3, Terasawa discloses determining a plurality of locations on a substrate where a black pixel is to be printed (col. 6, lines 46-51); printing a droplet of color ink at each of the locations and printing a droplet of black ink on top of each droplet of color ink at each black pixel location (col. 7, lines 9-13), wherein the droplet of color ink and the droplet of black ink are of substantially the same size (col. 12, lines 5-8). Terasawa does not disclose expressly equally distributing the color droplets. Moriyama et al. disclose equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the

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invention, it would have been obvious to a person of ordinary skill in the art to equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to consume the color inks at a consistent rate as the other colors. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 3.

Referring to claim 6, Terasawa discloses using cyan, magenta, and yellow ink at black locations but does not disclose expressly equally distributing the color droplets. Moriyama et al. disclose equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to consume the color inks at a consistent rate as the other colors. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 6.

Referring to claim 7, Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using bit patterns. Moriyama et al. disclose using 33.3% bit patterns for placing drops of cyan, magenta, or yellow (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize a bit pattern to determine which color ink droplet to use. The motivation for doing so

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would have been to reduce the amount of color ink used and to consume the different color inks at a consistent rate as the other color inks. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 7.

Referring to claim 8, Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using a stochastic halftone screen. Moriyama et al. disclose randomly choosing the color ink to distribute at black locations (col. 12, lines 2-12) and equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to randomly select the color ink to distribute at black locations and equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to eliminate the regularity of a predetermined pattern and to consume the different color inks at a consistent rate as the other color inks. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 8.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa U. S. Patent 6,102,520 as applied to claim 5 above, and further in view of Moriyama et al. U. S. Patent 6,312,102 and Fukasawa U. S. Patent 6,466,332.

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Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using a halftone screen to determine color ink distribution. Moriyama et al. disclose equally distributing cyan, magenta, and yellow ink at black locations based on a pattern (Fig. 11, col. 19, lines 44-48). Moriyama et al. does not disclose expressly using a halftone screen to determine which of cyan, magenta, and yellow to print. Fukasawa discloses using a halftone screen to determine the amount of color ink, using

$$K = \text{MIN}(C, M, Y) \text{ (col. 15, lines 1-5)}$$

$$C = C - K$$

$$M = M - K$$

$$Y = Y - K \text{ (ST6 of Fig. 1, col. 11, lines 3-11)}$$

$$C = C + (C.\text{sub.--PER} * K)$$

$$M = M + (M.\text{sub.--PER} * K)$$

$$Y = Y + (Y.\text{sub.--PER} * K) \text{ (col. 2, lines 41-47).}$$

Terasawa, Moriyama et al., and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to equally distribute cyan, magenta, and yellow at black locations according to a pattern as disclosed by Moriyama et al., and to generate a pattern using a halftone screen as disclosed by Fukasawa. The motivation for doing so would have been to produce an unremarkable black color and to consume the different color inks at a consistent rate as the other color inks. Further, Moriyama et al. discloses the method of distributing color ink according to a

pattern and Fukasawa simply discloses a process for generating a pattern. Therefore, it would have been obvious to combine Moriyama et al. and Fukasawa with Terasawa to obtain the invention as specified in claim 9.

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa U. S. Patent 6,102,520 as applied to claim 5 above, and further in view of Fukasawa U. S. Patent 6,466,332.

Referring to claim 10, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio by gray balancing. Fukasawa discloses determining the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black droplets by gray balancing (col. 7, lines 31-34).

Terasawa and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to determine the color ratio to distribute color ink at black locations by gray balancing. The motivation for doing so would have been to produce an unremarkable black color. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 10.

Referring to claim 11, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio to minimize the chromaticity in black. Fukasawa discloses adjusting the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black so as to minimize chromaticity in the black (col. 2, lines 41-49). Terasawa and Fukasawa are combinable because they are

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from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to adjust the ratio of color ink to minimize the chromaticity of black. The motivation for doing so would have been to produce an unremarkable black color. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 11.

Referring to claim 12, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio to minimize the chromaticity in black. Fukasawa discloses adjusting the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black so as to minimize chromaticity in the black (col. 2, lines 41-49). Terasawa and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to adjust the ratio of color ink to minimize the chromaticity of black. Applicant has not disclosed that the using a ratio of cyan droplets that is approximately 31%, a ratio of magenta droplets that is approximately 38% and a ratio of yellow droplets that is approximately 31% provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with adjusting the ratio of color ink to reduce chromaticity because both provide the same benefit of reducing the chromaticity in black. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 12.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

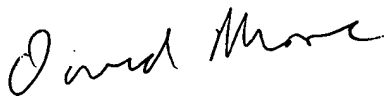
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter K. Huntsinger whose telephone number is (571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571)272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PKH


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